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AD-A231 919

STUDY PROJECT

CONVENTIONAL FORCES IN EUROPE: EFFECTIVE VERIFICATION

BY

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6 February 1990

U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3 RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Conventional Forces in Europe: Effective Verification		5. TYPE OF REPORT & PERIOD COVERED Individual Study Project 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Colonel Stephenson W. Page		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army War College Carlisle Barracks, PA 17013		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Same		12. REPORT DATE 6 February 1990 13. NUMBER OF PAGES 81
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution is unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

With the start of negotiations on conventional force reductions in Europe, the East and West will be able to reduce rather than increase forces in Central Europe for the first time in forty years. The unilateral withdrawal and reduction of conventional forces in Eastern Europe by the Soviet Union and other Warsaw Pact nations has already started a shift in the military balance. When these changes are carried out as announced and then followed by more reductions as proposed in the initial rounds of the CFE talks, the change in the military balance will be dramatic and the threat of security and stability will be

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Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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SENIOR SERVICE COLLEGE FELLOWSHIP PAPER

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A FELLOWSHIP PROJECT

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DATE: 6 February 1990 PAGES: 78 CLASSIFICATION: Unclassified

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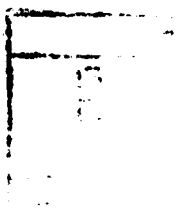
TABLE OF CONTENTS

ILLUSTRATIONS



CONVENTIONAL FORCES IN EUROPE: EFFECTIVE VERIFICATION

CHAPTER I

INTRODUCTION

Military confrontation has threatened the security and stability of Europe for decades. Since the mid 1950s, the capabilities of both alliances have increased in response to a "cold war," an "arms race," and technological advances. Conventional imbalance has been " . . . at the core of Europe's security concerns." Forward deployed Soviet forces, reinforced with other combat ready Warsaw Pact units, have posed a real and present capability for a surprise attack and large-scale offensive actions. Rapid and massive reinforcements, stationed only a few hundred kilometers to the East, are available to support offensive action.[1]

In May of 1989, Major General Lebedev, Deputy Department Chief of the Soviet Armed Forces General Staff, observed that:

> After a number of breakthroughs in the sphere of arms limitation[,] the need to curb the build-up of conventional forces and armaments grew particularly obvious. . . . Compared to the very recent past, the present-day combat effectiveness of conventional weapons has increased by ten to a hundred times, and this is not the limit.[2]

Agreements between the East and West to continue talks on Confidence- and Security-Building Measures (CSBMs) and to start negotiations on Conventional Armed Forces in Europe (CFE) reductions have the potential to change radically the military threat seen by both

alliances. More openness and a better understanding of intent alone could help reduce the threat of war in Europe. However, the real impact of these decisions is the potential for significant force reductions and reduced offensive capabilities.

On 15 January 1989, 35 European and North American members adopted the final document of the Third Conference on Security and Cooperation in Europe (CSCE). This document included provisions for additional negotiations on CSBMs between all members to reduce further mistrust and misunderstanding about military capabilities.

The CSCE final document also included a mandate for CFE negotiations. Sixteen NATO and seven Warsaw Pact states agreed to begin talks to: establish a stable and secure balance of conventional forces at lower levels; eliminate disparities and the capability to initiate a surprise attack and large-scale offensive actions. Parallel CSCE and CFE negotiations began on 9 March 1989. An effective and reliable verification system to monitor these changes is essential to strengthening security and stability in Central Europe.

> Verifying compliance with treaties is not a matter of trust. . . .[A] treaty on conventional forces must be designed to last well into the future. . . . [V]erification systems are the price of doing business in arms control.[3]

This paper will review the evolution of verification measures and the technologies to support them; examine lessons learned from carrying out the provisions of the 1986 Conference on Confidence- and Security-Building Measures and Disarmament In Europe (CDE) Accord and 1987 INF Treaty; and analyze the effectiveness of verification and stabilization measures to meet CFE objectives. The central premise of

this paper is that systematically applied stabilization and verification measures, supported by current technology, can constrain threatening military activity and provide visibility of military significant actions in the Atlantic to the Urals (ATTU) region.

The winds of change now blowing in Eastern Europe are affecting not only the military situation but also the economic and political order as well. In just four years, Mikhail Gorbachev has sent shock waves through the East and West. Announcing unilateral force reductions and allowing non-communist governments in Eastern Europe, he has encouraged radical change at an unprecedented pace with new programs of economic restructuring (perestroika) and greater openness in official life (glasnost). As new political leaders chart their nation's future, some believe that " . . . changes in East Germany [opening of the Berlin Wall and new attitudes toward the West] may lead to unity with West Germany and dissolution of the Warsaw Pact and NATO military alliances."[4]

A total break up of the two alliances is highly unlikely given the current state of flux in Eastern Europe and the uncertainty these changes have created. What does appear certain, for the first time in four decades, is German reunification and an environment that will allow the East and West to reduce rather than increase conventional force levels. Assurances, through effective verification, that forces removed cannot be regenerated at a rate that would destabilize the new military balance will be critical to security and stability as new economic and political relations evolve in Europe.

ENDNOTES

1. North Atlantic Council, "Conventional Arms Control: The Way Ahead," in "To Strengthen Stability and Security" Negotiation on Conventional Armed Forces in Europe, U.S. Department of State, March 1989, p. 22.

2. Major General Y. Lebedev and A. Podberezkin, "On the Eve of the Second Round of the CFE Talks," Izvestia, 4 May 1989 (abridged), in Soviet News (London), 10 May 1989, p. 154.

3. John R. Galvin, "Verification Can Secure This Treaty," International Herald Tribune, 8-9 September 1989, in Press Review, NATO Press Service, 8 September 1989, p. 2.

4. "Hungarian Foresees End of NATO, Warsaw Pact," Washington Post, 12 November 1989, p. A28.

CHAPTER II

A SUMMARY OF VERIFICATION CHANGES

Verification of arms control agreements has taken on new meaning and significant dimensions as interest has shifted from nuclear to conventional weapons and forces. For years, arms control verification regimes focused on issues that eliminated or reduced strategic weapon systems. Now the focus has expanded to include sub-strategic and conventional verification issues in Europe.

The bilateral Intermediate-range Nuclear Force (INF) Treaty, effective July 1988, requires the United States and USSR to eliminate all ground-launched nuclear force missiles (including cruse missiles) in the 500-5000 kilometer range over a three year period. The verification measures included in this treaty are significant and will have a direct impact on CFE verification procedures and methods.

After 15 years of unsuccessful talks between the East and West on mutual and balanced force reductions, real progress in conventional arms control now appears possible. An agreement could be signed in the summer or fall of 1990 if negotiators meet the timetable suggested by President Bush, endorsed by NATO and supported by the Soviet Union. This rapid change of events will require the alliances to accelerate decisions on a verification strategy and develop workable verification procedures and methods earlier than most ever thought possible.

The purpose of this chapter is to provide an overview of the major verification milestones in strategic, sub-strategic, and conventional

agreements. This will place the current CFE verification proposals in perspective.

STRATEGIC and SUB-STRATEGIC ARMS CONTROL

Verification has traditionally been a critical element of any arms control agreement between the United States and the Soviet Union. From Presidents Truman to Reagan, demands have varied from "foolproof" measures to "effective verification."[1] Regardless of the term used to describe these measures, verification of conventional arms reductions presents the East and West with new challenges. The quantity of CFE treaty limited items (TLIs) alone, tens of thousands versus thousands of items, present the alliances with significant problems.

Strategic Arms Limitation Talks I

In the 1950s, verification issues prevented the successful negotiation of agreements to control nuclear weapons. The Soviet Union consistently rejected the demands for on-site inspections and other intrusive measures. To them, these measures were " . . . merely a cover for Western espionage activities."[2]

President Eisenhower's "Open Skies" proposal in 1955 marked a turning point in the United States' demands for on-site inspections. Although rejected by the Soviet Union, this proposal signaled a shift in U.S. demands from physical intrusion to one of relying on advances in monitoring technology to provide assurances of compliance. U-2 reconnaissance flights and information from satellites provided the

U.S. with increased confidence in its ability to monitor Soviet activity. In the 1960s, this technology provided the necessary confidence to allow the U.S. to sign a Limited Test Ban Treaty (1963). This treaty prohibited nuclear weapons testing in the atmosphere, outer space and underwater. This led to the Strategic Arms Limitation Talks (SALT) in 1969. The US-Soviet SALT I agreement in 1972, limiting Anti-Ballistic Missiles to national capital regions plus one other area, " . . . firmly established the legitimacy of . . . national technical means (NTM). . ." as a way of providing compliance assurance. Although intentionally left undefined in the treaty, NTM includes all sensors that have the ability to " . . . remotely collect data on compliance." This includes satellites, ground stations, shipborne and aircraft sensors.[3]

Strategic Arms Limitation Talks II

The next two treaties, the Threshold Test Ban Treaty (TTBT) in 1974 and the Peaceful Nuclear Explosions Treaty (PNET) in 1976, reaffirmed NTM as a means of verification and included two additional provisions: exchange of data and on-site inspections. The TTBT limited maximum yields for underground test to 150 kilotons. The verification provisions included NTM and the exchange of data to help with yield determination. The PNET included detailed provisions permitting on-site test inspections for the first time. However, the U.S. has not ratified either treaty.[4] To some, this is a measure of the tension and suspicion between the two states. Some provisions, such as data

exchange and observers, cannot go into effect until the treaties are ratified.[5]

SALT II, signed in 1979, pushed verification to the limits by attempting to restrict qualitative and quantitative aspects of nuclear weapons. It included several provisions to support NTM. "Counting rules" distinguished launchers with missiles carrying multiple independently targeted reentry vehicle (MIRV) warheads from launchers with single warheads. Functionally related observable differences (FROD) identified heavy bombers with Air Launched Cruise Missiles (ALCM) having a range greater than 600 kilometers. The treaty also prohibited encrypting telementry data. Even with these measures, the debates on verification were intense. For this reason plus others, the United States did not ratify the treaty. However, the President agreed to observe the treaty provisions on a reciprocal basis.[6]

Because of a continuous pattern of Soviet noncompliance, the President decided to end U.S. observance of SALT I and II on May 27, 1986.[7] Nevertheless, the verification progress made in these treaties was important. The lessons learned from this experience had a direct impact on U.S. verification standards and the follow-on treaty.

Intermediate-range Nuclear Force (INF)

> The INF Treaty involves less than 5% of the super-powers' nuclear stockpile and as such does not have great impact on the total global warhead count. Politically, however, it is a very significant treaty. In addition, the standards that the INF verification scheme sets for further arms-control agreements are far-reaching.[8]

The INF Treaty provides for on-site inspection, data exchange, perimeter/portal monitoring and a critical cooperative measure designed

to enhance the effectiveness of NTM: the right to request open display of road-mobile ground-launched ballistic missiles at operating bases.[9] Experiences gained carrying out the verification provisions of this treaty and integrating base-line data updates with the databases from other sources, such as, photographic intelligence (PHOTINT), signal intelligence (SIGINT), and human intelligence (HUMINT), will provide valuable lessons for conventional force verification.

CONVENTIONAL ARMS CONTROL

Efforts to address conventional arms control issues in Central Europe started in the mid 1950s. In 1954, the Soviets proposed a "Draft General European Treaty" on collective European security at the Four Power foreign ministerial conference in Berlin. The West rejected this proposal. It was seen as an overt attempt to remove US forces from the security of Western Europe.[10]

1960s

The next phase started in 1964 when the Polish foreign minister proposed a European security conference with U.S. participation. In 1968, the North Atlantic Council proposed mutual and balanced force reductions. The Soviet invasion of Czechoslovakia in August of 1968 delayed further actions.[11]

1970s

It was not until May 1972, at the Nixion-Brezhenev summit in Moscow, that the Soviets agreed to begin mutual and balanced force

reduction talks in exchange for the U.S. starting talks on security and cooperation in Europe. The Conference on Security and Cooperation in Europe (CSCE) started in Helsinki in November 1972 and produced the Helsinki Final Act in August 1975. This act addressed three broad issues between the East and West: (1) interstate relations and confidence building measures; (2) cooperation in economics, science, and technology; and (3) cooperation in humanitarian and other fields. The most significant parts affecting the military balance were the provisions to provide advance notification of major maneuvers involving more than 25,000 troops; and voluntary, bilateral invitations to participating states to have observers present. The agreement also included three other voluntary confidence building measures: advance notification of major military movements; prior notification of smaller-scale maneuvers, and exchange of military personnel.[12]

The Mutual and Balanced Force Reduction (MBFR) talks began in October 1973. The problems were many and after 15 years of negotiations " . . . failed to achieve the slightest tangible results." The talks excluded Hungary and Italy, covered a limited area in central Europe, and failed to come to agreement on counting rules and methods/means of imposing the cuts and ceilings. However, participants agreed on several key principles: the need for military parity on both sides; the need for measures to verify reductions and monitor forces remaining in the zone; and the collective nature of reductions.[13]

1980s

The next major milestone came in September 1986. At the Conference on Confidence and Security Building Measures and Disarmament

in Europe (CDE) in Stockholm, 35 European and North American countries agreed to the first arms control agreement since SALT II. This accord, called the Stockholm Document, regulates tasks to which military force can be applied, clarifies politico-military intentions and enhances predictability. It requires advance notification, allows observation and on-site inspections of major military activities, and prevents nations from massing forces without being subject to prompt inspection and accountability.[14]

Over the past 35 years agreements produced slow but steady progress in establishing ways to verify agreements. Between the 1950s and 1980s, verification demands have come full circle. Initially, demands for intrusive measures gave way to non-intrusive means as monitoring technology provided an effective way to observe military activity. As weapon technology improved, weapon systems became smaller, more mobile, and dual-capable. NTM could no longer provide adequate assurances of compliance as demands for higher levels of confidence increased. To fill this void, negotiators added cooperative measures and constraints. Unprecedented acceptance of more intrusive means of verification, such as on-site inspections, and more openness, such as data exchange, has greatly increased the complexity of these agreements. However, this process has reduced tensions between the East and West, reduced the potential for accidental confrontation, and increased the potential for even more significant reductions.

ENDNOTES

1. William F. Rowell, Arms Control Verification - A Guide to Policy Issues for the 1980s, p. 2.

2. Ibid., p. 3.

3. Ibid., p. 3-4.

4. Ibid., p. 4.

5. Allen S. Krass, Verification: How Much is Enough? p. 3.

6. Rowell, p. 5.

7. U.S. Arms Control And Disarmament Agency 1987 Annual Report, p. 180.

8. Jeremy K. Leggett and Patricia M. Lewis, "Verifying a START Agreement: Impact of INF Precedents," Survival, September/October 1988, p. 410.

9. Ibid.

10. John Borawski, From the Atlantic to the Urals: Negotiating Arms Control at the Stockholm Conference, pp. 1-2.

11. Ibid., pp. 5-6.

12. Ibid., pp. 11-15.

13. Peirre Lellouche, et al, Conventional Forces and Arms Limitations in Europe, pp. 5-10.

14. Borawski, p. xiii.

CHAPTER III

CFE: CURRENT PROGRESS

On 9 March 1989, sixteen NATO allies and seven Warsaw Pact nations began negotiations on Conventional Armed Forces in Europe (CFE). Designed to reduce or eliminate the ability of either alliance to undertake a conventional surprise attack or large-scale offensive action, these talks could produce dramatic force reductions in the Atlantic to the Urals (ATTU) region.

NATO/WARSAW PACT PROPOSALS

Both alliances tabled proposed limits for tanks, armored troop carriers, artillery pieces, combat aircraft and helicopters in the ATTU region. Each side agreed that within the ATTU five categories of items should be limited by sub-zone, foreign based forces (stationed forces) should be restricted, and the proportion of the total entitlement held by any one country should be limited (sufficiency). The United States proposed reducing its forces to 275,000 while the Soviet Union has specified ceilings for the ATTU, stationed forces and sufficiency. The following two figures show the magnitude of these limits. Figure 1 compares the proposals by category for these three conditions. Figure 2 displays NATO's proposed sub-zone restrictions.

NATO/WP PROPOSED LIMITS
(for each Alliance)

CATEGORY		ATTU	STATIONED	SUFFICIENCY
Tanks				
	WP	20000	4500 (1)	14000
	NATO	20000	3200 (2)	12000
ATC				
	WP	28000	7500 (1)	18000
	NATO	28000	6000 (2)	16800
Artillery				
	WP	24000	4000 (1)	17000
	NATO	16500	1700 (2)	10000
CBT A/C				
	WP	1500	350	1200
	NATO	5700	NS (5)	3420
Helicopters				
	WP	1700	600	1350
	NATO	1900	NS	1140
Ground Forces				
	WP	1350000	350000 (3)	920000
	NATO	NS	275000 (4)	NS

Notes: (1) Total (3) USSR only (5) NS: not specified
(2) Manned units only (4) US only

Source: CFE Negotiation on Conventional Armed Forces in Europe, U.S. Arms Control and Disarmament Agency, Office of Public Affairs, undated, pp. 3-4.

FIGURE 1

Both sides agree on the ATTU limits for tanks and armored troop carriers although definitions vary by category. The impacts of category definitions will be discussed in the next section: The Numbers Issue. Both agree on the idea of stationed forces and country limits. The differences in stationed limits could be reduced by including NATO's equipment in storage. The numbers for sufficiency differ by 5-10%. NATO proposed a 30% limit and the Warsaw Pact proposed 35-40% ceilings. The CFE negotiations will have to resolve these differences.[1]

NATO SUB-ZONE PROPOSAL

Categories	(1) Zone 1	(2) Zone 2	(3) Zone 3	(4) Zone 4
Tanks	20,000	11,300	10,300	8,000
ATC	28,000 (5)	20,000	18,000	11,500
Arty	16,500	9,000	7,600	4,500
Aircraft	5,700 (6)	NA (7)	NA (7)	NA (7)
Helicopters	1,900 (6)	NA (7)	NA (7)	NA (7)
Manpower	- (8)	- (8)	- (8)	- (8)

Notes:
(1) Zone 1 includes Zones 2,3,& 4 plus Iceland, Norway, Greece, Turkey, Leningrad Military District (MD), Kiev MD, Odessa MD, Romania, Bulgaria, Central Asian MD, North Caucasus MD and Transcaucasus MD.
(2) Zone 2 covers active duty units only and includes Zones 3 & 4 plus Portugal, Spain, Moscow MD, Ural MD, and Volga MD.
(3) Zone 3 covers active duty units only and includes Zone 4 plus Denmark, United Kingdom, France, Italy, Baltic MD, Belorussian MD, Carpathian MD and Hungary.
(4) Zone 4 covers active duty units only and includes Netherlands, Belgium, Lux., West Germany, East Germany, Poland, and Czechoslovakia.
(5) Of which no more than 12,000 would be Armored Infantry Fighting Vehicles.
(6) Land-based combat aircraft/helicopters.
(7) Because of the extreme mobility and speed of aircraft and helicopters, NATO has not proposed regional sub-ceilings or ceilings of stationed equipment.
(8) NATO proposed a stationed total manpower limit of 275,000 eacn for the U.S. and USSR.

Source: CFE Negotiation on Conventional Armed Forces in Europe, U.S. Arms Control and Disarmament Agency, Office of Public Affairs, undated, p. 5.

FIGURE 2

The Warsaw Pact tabled two sub-zone proposals. The first proposal, submitted in May 1989, contains three zones: Central, Forward and Rear Zones. A June, 1989 alternative proposal contains four zones: Central, North, South, and Rear Zones.[2] Differences between the East and West proposals will be major negotiation issues and must be resolved to ensure the sub-zones are balanced and do not isolate NATO's flanks.

THE NUMBERS ISSUE

In January 1989, the Warsaw Pact released its count of Warsaw Pact and NATO forces for the first time. Although seen as a positive move, it has created new questions about definitions and counting rules.

WP and NATO SYSTEM COUNT

		(1) WP COUNT	(2) NATO COUNT	IN STORAGE	NATO COUNT w/ Storage
Tanks					
	WP	59470	51500	5800+	57300
	NATO	30690	16424	5800	22224
ATC					
	WP	70330	55100	5260+	60360
	NATO	46900	23340	5260	28600
Artillery					
	WP	71560	43400	2870+	46270
	NATO	57060	14458	2870	17328
CBT A/C					
	WP	7876	8250	530+	8780
	NATO	7130	3977 (3)	530	4507
Helicopters					
	WP	2785	3700	180+	3880
	NATO	5270	2419	180	2599
Ground Forces					
	WP	3573100	3090000		
	NATO	3660200	2213593		

Source: Soviet Military Power: Prospects For Change 1989, DOD, Sep 1989.

Notes:
(1) Figures released by Warsaw Pact, 30 January 1989.
(2) Figures released by NATO in May 1989. NATO counts only equipment in fully or partially manned units. See "in storage" for NATO equipment in storage. NATO estimates WP stored equipment is more than NATO's in all categories.
(3) Figures do not include trainer A/C and are not based on the same definitions used in determining ceilings on CBT A/C and CBT helicopters that NATO proposed in CFE negotiations in July 1989.

FIGURE 3

Although the East has recognized the imbalance of conventional forces, the lack of common definitions and counting rules produce significantly different views of the status of treaty limited items (TLIs). The difference in tanks is a good example. NATO counts only "main battle tanks" in active and manned units while the Soviets appear to count all tanks regardless of armament in both active units and in storage. NATO defines a "main battle tank" as a tracked vehicle weighing 26 or more metric tons with a 90+ mm main gun. The Warsaw Pact includes light tanks while the NATO count excludes them. NATO lists light tanks under "other Armored Vehicles."[3]

The count of infantry fighting vehicles and artillery pieces also reveal significant differences. NATO defines Armored Infantry Fighting Vehicles (AIFV) as " . . . an armored vehicle capable of carrying troops and armed with a 20mm or larger gun." "Other Armored Vehicles" include M113s and armored command vehicles. NATO combines these two categories into one, "armored troop carriers." The Warsaw Pact also total these vehicles in a category called "infantry fighting vehicles and armored personnel carriers" but does not come close to the same estimate as NATO. Each side also defines artillery differently. The Warsaw Pact includes all artillery above 75mm and mortars down to 50mm while NATO only includes artillery and mortars of 100mm or above.[4]

Similar problems are evident with aircraft, but the issues are easier to understand because both list the aircraft included in their estimate. Definitions and counting rules must be clarified during negotiations. Initial reactions to the release of these numbers have been upbeat and all indications are that the definition and counting

rule issue will be resolved. No one wants a " . . . replay of the futile 15 years of effort that went into the recently disbanded Mutual and Balanced Force Reduction negotiations." Even Soviet Foreign Minister Shevardnadze has stated that " . . . figures should not become an obstacle to politics." [5]

Different definitions and counting rules have an impact in two areas: first, in the current correlation of forces seen by each alliance and second, in the number of systems to be withdrawn and/or destroyed.

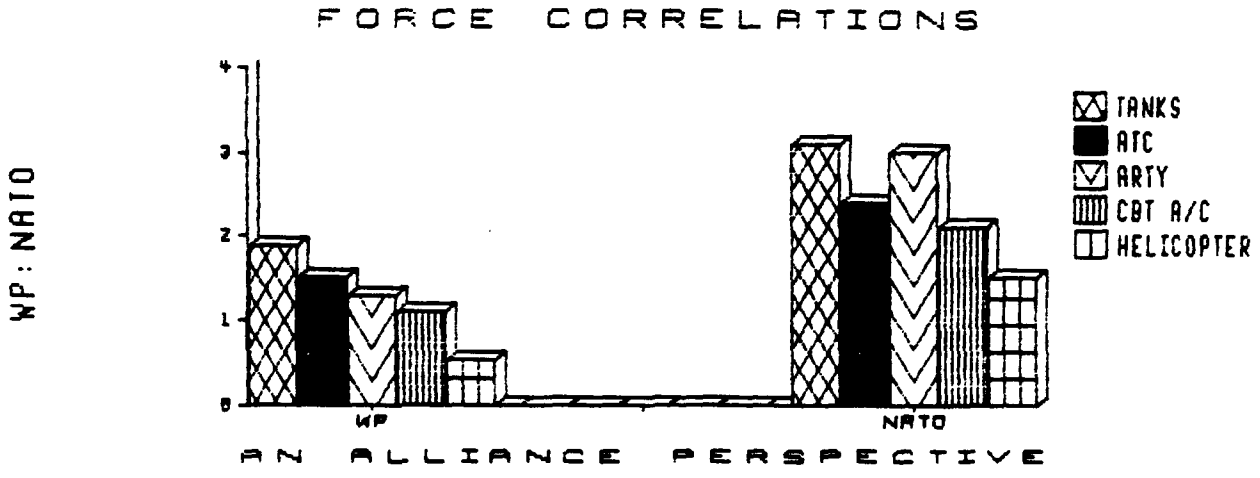


FIGURE 4

Figure 4 compares TLI ratios based on these assessments. For example, the Warsaw Pact sees the WP to NATO tank ratio as 2:1. On the other hand, NATO sees a WP to NATO tank ratio of 3:1 (NATO excludes items in storage.) Figure 5 shows the impacts, using NATO's count, on the number of TLIs to be removed by each alliance.

TREATY-LIMITED ITEMS TO BE REMOVED

	From WP using NATO LIMITS/COUNT		From NATO using NATO LIMITS/COUNT		From NATO including storage	
Tanks	31500	minus	3576	plus	2224	minus
ATC	27100	minus	4600	plus	600	minus
Artillery	26900	minus	2042	plus	828	minus
CBT A/C	2550	minus	1723	plus	1193	plus
Helicopters	1800	minus	519	minus	699	minus
	89850	removed	519 11941	removed gain	4351 1193	removed gain

FIGURE 5

It is unlikely that NATO will be able to exclude systems in storage. The impact of that position is evident from the comparison in Figure 5. While the definitions and counting rules will have to be resolved in Vienna, Figure 5 shows the magnitude of the potential changes and the verification challenge. The East will have to remove almost 90,000 items of equipment and the West will have to remove over 4,000. Using NATO's proposed limits, over 72,000 treaty limited items, limited by sub-zone, stationed forces and by country, will remain in the East to be verified. A recent U.S. proposal to limit U.S. and Soviet forces to 195,000 each in Central and Eastern Europe, respectively, and a favorable Soviet response indicate that troop cuts could be much deeper than expected.

ENDNOTES

1. CFE Negotiation on Conventional Armed Forces in Europe, U.S. Arms Control and Disarmament Agency, undated, p. 1.

2. Ibid., pp. 6-7.

3. Thomas Halverson and Jack Mendelsohn, "Dueling Beancounts: Pact and NATO Size Up European Forces Differently," Arms Control Today, May 1989, p. 26.

4. Ibid.

5. Ibid., p. 28.

CHAPTER IV

NATO's VERIFICATION PROPOSAL: AN OVERVIEW

On 21 September 1989, NATO tabled a position paper on verification and stabilization measures to reinforce their recommendations for numerical parity. These measures address exchange of information, stabilizing measures, verification provisions, and measures to prevent circumvention. These additional measures are necessary to ensure that the arms reductions will in fact result in lasting stability and security.[1]

INFORMATION EXCHANGE

Information about the structure of land, air and air defense forces for all combat, combat support and combat service support formations and units down to battalion/squadron or equivalent level will be exchanged annually. Active units, "low strength units," and naval aviation permanently based on land will be included. The U.S. and USSR also will provide information on the number and location of their ground and air force personnel stationed on the territory of other participants in the area of application.[2]

The following matrix summarizes the data elements proposed by the West. If accepted by the East, the amount of information exchanged will be extensive and critical to the verification program.

INFORMATION EXCHANGE MATRIX

DATA ELEMENTS	Active/ Low St Units	Sites after 1 Jan '89	Monitored Depots	(1) Support Locations	(2) Circumv Potential
Designation	X				
Location	X	X	X	X	X
Strength					
Peace-Time	X				
Authorized	X				
Holdings					
MBT	X	X	X	X	X
Arty	X	X	X	X	X
ATC	X	X	X	X	X
CBT A/C	X	X	X	X	X
CBT Hel	X	X	X	X	X
AVLBs	X		X		X

Notes: 1. Support locations include sites where treaty-limited equipment may be present on a regular or periodic basis, such as maintenance and repair depots, training establishments, etc.

2. Treaty-limited equipment on the territory of participants not subject to treaty limitation but with the potential for circumvention, such as equipment in paramilitary units and equipment from production plants within the zone but not in service with the armed forces.

FIGURE 6

Participants must provide advanced notification of any organizational structure changes to existing units or additions of new units of at least a battalion/squadron or equivalent. Also, any changes of 10 percent or more in the peacetime planned/authorized strength or holdings of treaty-limited equipment require advance notification.[3]

STABILIZING MEASURES

NATO identified five stabilizing measures for ground forces and one air stabilizing measure:

> Measure 1 requires advanced notification of reserve call-ups of 40,000 or more reservists.
>
> Measure 2 requires advanced notification of movements if such movements exceed 600 MBT, 400 artillery pieces, or 1200 ATC within two weeks.
>
> Measure 3 covers monitored storage requirements and restricts selected TLIs in active units to 16,000 MBT, 14,500 artillery pieces and 25,500 ATCs for each group of states. Excess amounts of these items within area `4.2' but within the authorized ceilings will be placed in monitored storage or in monitored low strength units. Items in area `4.3' must be placed in monitored storage sites.[4]
>
> Measure 4 limits armored vehicle launched assault bridges (AVLBs) to 700 for each group of states in active units. Any amount over 700 must be placed in monitored storage. Also only a maximum of 50 AVLBs may be withdrawn from monitored storage. Removal and replacement requires notification.
>
> Measure 5 constrains the size of any military activity to 40,000 troops or 800 MBT if organized into a divisional structure or into at least two brigades/regiments. Participants may conduct one military activity that exceeds these limits within a 2 year period. However, this requires 12 months advance notification.
>
> NATO also proposed that negotiation should address additional stabilizing measures to deal with aircraft and helicopters.[5]

VERIFICATION MEASURES

The West identified nine verification measures to provide confidence in compliance, deter violations, and enable violations to be

detected in a timely fashion. NATO further specified that the verification regime should be " . . . simple, reliable and as inexpensive as possible, consistent with the needs of effective verification." Implementation will be " . . . the responsibility of each sovereign state . . . ", but cooperatives measures between allies should not be impeded.[6]

The following is a summary of the key elements of these measures:

> Measure 1 addresses declared sites subject to short notice inspection with no right of refusal. The CFE negotiating teams must define the quota of inspections (expressed in the number of days presence), duration of visit at any one site, and limit of the number of teams that will be allowed to visit at any one time.
>
> Measure 2 covers non-declared sites. NATO proposes that participants have the right to request inspection of other sites in the area of application. Although receiving states would have a right of delay and ultimately refusal, NATO suggests these should be held to a minimum in the spirit of `good faith.' Quotas are to be negotiated using the same criteria proposed, if possible, for declared sites.
>
> Measure 3 requires monitored storage sites and monitored low strength units to be subject to appropriate monitoring measures. These measures will be defined by the participants.
>
> Measure 4 addresses monitoring of reductions. It requires advance notification of destruction, on-site monitoring without the right of refusal, and completion on an agreed timetable within a period of (x) years. U.S. and USSR reductions of stationed personnel will be subject to monitoring and completed within a period of (y) months.
>
> Measure 5 gives the participants the right to monitor selected stabilizing measures: call-up of reserves, movements and the size of military activities.

Measure 6 provides for aerial inspection. Modalities and quotas require more study. However, cooperative measures to enhance aerial inspections should be considered.

Measure 7 suggests the possible need for "special measures" for verifying land based aircraft and helicopters such as identification numbers and perhaps tagging. This also requires more study.

Measure 8 specifies non-interferance with national or multinational technical means of verification or the use of concealment measures that impede verification except for normal cover and concealment associated with training, maintenance and operations.

Measure 9 establishes a Joint Consultive Group to resolve ambiguities, address questions of compliance, and promote the treaty's viability.[7]

Although these nine verification measures may be modified during CFE negotiations, they form the basis for this paper and will be used to analyze the effectiveness of verifying a CFE treaty.

MEASURES TO PREVENT CIRCUMVENTION

Each participant has the right to withdraw if " . . . it decides that extraordinary events related to the subject matter of the treaty have jeopardized its supreme interest." Notice is required along with the "a statement of the extraordinary events" causing its withdrawal. Also each participant has the right to withdraw if " . . . a party were to increase its holdings [of treaty limited items] . . . in such proportions as to pose a direct and obvious threat to the balance of forces within the area of application."[8]

ENDNOTES

1. "NATO Tables Verification Proposal at CFE Negotiations," Daily Wireless File, U.S. Information Service, Rome, 25 September 1989. p. 5.

2. Ibid., p. 6.

3. Ibid., pp. 6-7.

4. Area "4.2" is Zone 2 and area "4.3" is Zone 3 (see Figure 2, Chapter III for definitions). Because Zone 2 includes Zones 3 and 4, this measure restricts excess equipment in Zone 3 or 4 to monitored storage facilities only. Excess equipment in Zone 2, less Zones 3 and 4, can be placed in either monitored low strength units or monitored storage.

5. "NATO Tables Verification Proposal at CFE Negotiations," pp. 8-9.

6. Ibid.

7. Ibid., pp. 9-10.

8. Ibid., p. 11.

CHAPTER V

Verification Standards

Verification standards changed as technology improved and demands increased for greater assurance that all parties are complying with the treaty provisions. Past performance in meeting treaty obligations has certainly played an important role in developing U.S. attitudes about verification standards. Before reviewing the standards question, it would be helpful to review the key elements of the verification process.

According to Allen Krass, a Professor of Physics and Science Policy at Hampshire College and Senior Analyst for the Union of Concerned Scientists, verification can be viewed as activities occurring in six sequential stages:

> - Stage 1: Monitoring, or the gathering of data. Monitoring can be as simple as reading professional journals or as complex as photographing military facilities from satellites. This activity can be subdivided into two distinct sub-activities: surveillance and reconnaissance. While surveillance involves systematic observation on a continuous or periodic basis, reconnaissance is accomplished on a mission basis aimed at a specific objective. An example of the former would be tamper-proof cameras in a production plant. An example of the latter would be on-order photographs from reconnaissance satellites.
>
> - Stage 2: Information processing. This stage involves converting the data into appropriate forms. For example, converting images to digital data for additional processing by computers.

- Stage 3: Analysis. Digital or analog data must be analyzed by specially trained analysts or by computers that have been taught to "think" like analysts.

- Stage 4: Identification. This activity determines if the data shows a violation. It is at this stage that uncertainties enter into the process and additional information from other sources may be required. This could be as simple as asking the responsible party for an explanation or as complex as redirecting resources to gather more detailed data. The results quite often can be no more precise than a probability that an event represents a violation. [It is at this stage that Krass cautions about false alarms: ' . . . verification systems must attempt to balance the military and political consequences of possibly missing some important event against the difficulties of trying to pick the real events out of the noisy background of false ones, and the political consequences of possibly responding to false alarms as if they were real.']

- Stage 5: Evaluation. Decision makers must decide how important a possible violation or pattern of behavior is in the overall problem of national security.

- Stage 6: Response. Once a decision is made that a significant violation has occurred, there are many possible responses. These can vary from ignoring the incident (to protect intelligence sources) to abrogation of the treaty.[1]

Reviewing the verification process as sequential activities demonstrates how the process changes from one of technical issues to political issues. Because of this, verification standards have taken on considerable importance, particularly in the U.S. as pressures to reduce uncertainty to zero have grown.

For several U.S. administrations, "adequate" was the adjective used to describe the U.S. verification standard. During the Reagan Administration, the description changed from "adequate" to "effective"

primarily because of dissatisfaction with previous treaty provisions and compliance performance. Before the INF Treaty, the difference between these two standards was not clearly defined, " . . . only inferences that U.S. monitoring had to be more intrusive and verification requirements tougher."[2] The measures included in the INF Treaty obviously show that "effective" means more openness and intrusion. This is the U.S. standard for bilateral agreements controlling sub-strategic arms. How will this effect the verification of a conventional arms control agreement in a multinational environment? What standard will be used: adequate or effective? What constitutes effective conventional arms control verification? These questions will be addressed in this chapter.

First, what constitutes adequate arms control verification? During a 1988 Symposium on Scientific and Technical Aspects of Development of New Weapons, Verification Issues, and Global Security, Professor Catherine Kelleher, University of Maryland, observed that

> . . . there is very little agreement on what would constitute an adequate system to verify the limitation or elimination of conventional forces. . . . [M]ost people who have looked at conventional force verification have agreed that it poses one of the most difficult problems they have ever confronted, far more difficult than verification of a regime for nuclear-weapon limitation or prohibition.[3]

Thomas J. Hirschfeld, former U.S. deputy representative to the Mutual and Balanced Force Reduction Talks, reported that Paul Nitze, senior arms control adviser to President Reagan, answered this question at Harvard University, by saying:

> The proper standard is to be confident that, if the USSR moves beyond the limits of the treaty in any militarily significant way, we would be able to detect such a violation in time to respond effectively and thereby deny the Soviets the benefit of the violation.[4]

Hirschfeld contends that Nitze's answer " . . . has a long history and essentially reiterates a criterion first stated in the Kennedy administration." He also notes that "CFE treaty obligations will be harder to verify than INF or any previous arms control agreement." Being successful will depend on " . . . reducing somewhat unrealistic public, parliamentary, and official expectations for exact verification standards . . . ."[5]

More recently, Lynn Hansen, U.S. Delegate at Large, noted that:

> It would be wise to dispense with all adjectives in addressing the issue of verification. Words such as adequate or effective lose their meaning since judging compliance as the penultimate step in the verification process is not a pure science and there are no widely accepted criteria for establishing adequacy or effectiveness. Ascertaining compliance is an analytical task involving incomplete -- often piecemeal -- data, which is sometimes tinged by political considerations in the midst of concern about national security.[6]

The Mandate for Negotiation on Conventional Armed Forces in Europe states that compliance will " . . . be verified through an effective and strict verification regime," to include on-site inspections as a matter of right and exchanges of information. Information exchanged

will be of sufficient detail to " . . . allow a meaningful comparison of the capabilities of the forces involved . . . [and] . . . to provide a basis for the verification of compliance."[7]

It is clear that "effective and strict verification" is the desired standard for a CFE treaty. What this means in practical terms, especially concerning the amount of intrusiveness required, remains to be seen. Some have suggested that not all the nations will accept U.S. standards. Each state must consider the political and security implications and may " . . . insist on defining limits of intrusiveness acceptable in the various monitoring schemes to be negotiated."[8]

Professor Kelleher argues that any verification system should " . . . recognize a military significant deviation from what has been agreed to[;] . . . have objective monitoring capability to recognize a violation and to allow for the specification of a response or penalty; . . . provide timely warning [; and be] . . . operational most, if not all, of the time."[9] Lynn Hansen agrees. He asserts that " . . . most experts agree that the proper standard for verification is Western ability to identify the risk to security, respond effectively, and deny any significant advantage to the violator."[10] Thomas Hirschfeld is more specific:

> Any agreement should include sufficient information exchange, reciprocal oversight rights and cooperative measures, especially in the forward area, to increase confidence in adequate warning. The West will need to concentrate scarce monitoring resources on militarily significant force changes, rather than on a technically impossible attempt to prevent any and all cheating.[11]

It is clear from this discussion that a concise definition of an effective CFE verification system is not readily available. However, some key elements are common in all these comments. First, an effective verification system must have a basis from which to detect changes. Second, the monitoring techniques employed must be robust enough to provide early warning by detecting militarily significant changes. And third, the system must provide for effective action if militarily significant changes are detected. General Galvin's comments about the verification system seem to support this view:

> The system . . . does not have to be capable of identifying every single tank over the treaty limits. But by allowing inspectors to identify an increase in proscribed equipment before any build-up becomes militarily significant, the verification process will become a major contributor to strategic warning.[12]

The CFE proposal tabled by the West contains the three key elements of an effective verification system: item ceilings and the information exchange process provide a basis for measuring change; the stabilizing and verification measures provide the opportunity to observe military activity; and the Joint Consultive Group and non-circumvention provisions provide for actions if changes are detected. The remaining chapters address the effectiveness of these elements in monitoring conventional force reductions and detecting "militarily significant changes."

ENDNOTES

1. Krass, pp. 6-9.

2. Michael Krepon, "The Politics of Treaty Verification and Compliance," in Arms Control Verification: The Technologies That Make It Possible, ed. by Kosta Tsipis, David W. Hafemeister and Penny Janeway, p. 21.

3. Catherine Kelleher, "Verification Issues," in Pugwash Symposium on Scientific and Technological Aspects of Development of New Weapons, Verification Issues, and Global Security, 11-12 May 1988, pp. 26-27.

4. Thomas J. Hirschfeld, "The Toughest Verification Challenge: Conventional Forces in Europe," Arms Control Today, March 1989, p. 16.

5. Ibid.

6. Lynn Hansen, "Verifying Conventional Forces Reductions," a paper presented at a Conference on Inspection Regimes for Multilateral Negotiation, Henry L. Stimson Center, 19 October 1989, p. 3.

7. "Mandate For Negotiation On Conventional Armed Forces In Europe," The Arms Control Reporter, March 1989, pp. 407.D.20 - 407.D.21.

8. Hansen, p. 2.

9. Kelleher, p. 26.

10. Hansen, p. 5.

11. Hirschfeld, p. 16.

12. John R. Galvin, General, "Some Thoughts on Conventional Arms Control," Survival, March/April 1989, p. 106.

CHAPTER VI

VERIFICATION TECHNOLOGY AND METHODOLOGY

Verifying a conventional arms control treaty is a complex process as evident by the number of measures contained in NATO's verification proposal. Tools to accomplish this task have been used to varying degrees in other arms control agreements or CSBMs. The purpose of this chapter is to review the technologies and methods used to support the verification process.

Technology

National Technical Means (NTM)

By 1976, NTM was well established as a means of verifying strategic arms control agreements. Although neither the U.S. nor the Soviet Union has ever defined NTM in a treaty, the U.S. State Department defines it as

> assets under national control for monitoring compliance with the provisions of an agreement. NTM include photographic reconnaissance satellites, aircraft-based systems (such as radars and optical systems), as well as sea- and ground-based systems such as radars and antennas for collecting telemetry.[1]

Satellites provide the U.S. and Soviet Union with an effective, non-intrusive means of monitoring treaty compliance. These overhead platforms use many types of sensors such as imaging devices, infrared detectors, radars, and electronic listening devices to monitor

activity.[2] Although used primarily to monitor fixed sites and flight tests associated with strategic weapon systems, their ability to identify major items of equipment and monitor military maneuvers will play an important role in CFE verification. " . . . [O]ngoing improvements in satellite photography such as increasing coverage, improving timeliness, or enhancing detail are useful. Synthetic aperture radar promises quasi-photographic coverage even at night and in bad weather."[3]

Digital imaging techniques have replaced the need for film-return systems. Modern satellites develop the film on-board, convert the images to digital code using optical-electronic scanning devices and transmit it back to Earth for image processing. "The newest satellites, for example the KH-11 (keyhole), reportedly possess . . ." this capability.[4] Radar imaging systems produce images at night and through clouds. Some believe the KH-11 replacement, KH-12, will include a radar imaging system.[5]

Highly classified electronic intelligence (ELINT) satellites are used to monitor signals such as missile telemetry, communications, and radars. Other satellites equipped with sensitive infrared sensors can provide early-warning by detecting the heat from a missile's exhaust as it is launched or breaks through the cloud cover. Overhead platforms also monitor the atmosphere for nuclear tests prohibited by the Limited Test Ban Treaty. During a nuclear war, these systems could provide data on the location and yields of nuclear detonations.[6]

A recent decision to end funding for the U.S. SR-71 reconnaissance program [7] suggests increased confidence in satellite monitoring

capabilities. For over 20 years, this strategic reconnaissance aircraft, flying at heights greater than 80,000 feet and at top speeds more than Mach 3, provided "close-look" coverage necessary for detailed monitoring of selected areas.[8]

Data Exchange

Data exchange covering the military infrastructure and deployed forces has had a significant impact in recent arms control agreements. The INF treaty and the CDE agreement set important precedents for the exchange of significant military information. If adopted, the NATO proposal for CFE data exchange will build on these measures and become a critical feature in monitoring a CFE treaty. A modern interactive automation system will be critical to the management of this enormous amount of data.

On-Site Inspection (OSI)

Both sides agree that on-site inspections are necessary to verify CFE agreements. Several different types are used to monitor treaty obligations:

- Base-line inspections are used to confirm data exchanges. In the INF treaty, base-line inspections established the number of systems to be destroyed. This will be especially critical with CFE TLIs since residual levels are also limited by sub-zone and by nation.

- Elimination inspections confirm dismantling or destruction of military equipment. Confirming equipment removal also could be included in this type inspection especially given the sub-zone restrictions included in the CFE proposals.

- Short-notice Inspections of declared sites increase confidence that limitations are being met. Although these inspections are no guarantee against cheating, they help to deter it.

- Challenge inspections are used to inspect sites other than declared sites at which treaty violations are suspected. The CDE agreement included challenge inspections and covered all aspects of suspected military activity limited by the CDE accord.

- Continuous monitoring of specific facilities could entail full-time inspectors. For example, U.S. portal monitors will be stationed at the Votkinsk Missile Assembly Plant for 13 years. [9]

- Observation visits were included in the Helsinki Final Act of 1975 and the Stockholm Document of 1986. These differ from an inspection visit. During observation visits the host country controls the schedule of activities and limits the freedom of movement of the observers. Although this technique has limited value as a verification tool, it has served both sides as a useful means of increasing openness and military contact between the two alliances.

Unattended Sensors

Unattended sensors such as seismic sensors, cameras, and "continuity fences" could be used to reduce the requirement for on-site inspectors or at least, limit the number in selected areas. Seismic sensors could be used to monitor the movement of armored vehicles from one area to another. Although used effectively in the Sinai by the Multinational Force and Observers,[10] this technique appears to have limited utility in the CFE zone because of the types, locations and number of TLIs. However, it is a mature technology that can be used selectively to reinforce other unattended systems. Cameras mounted in monitored storage could be an effective way to reduce manpower requirements yet provide a wide area of coverage. "Continuity fences" comprised of optic fibres stretched along existing fencing could help monitor the passage of vehicles. This could be used as a tool to prevent cheating during an on-site inspection. Counters would be set to detect and count movements after a specified time. This would inform inspectors of vehicles removed from an area after an inspection request is made.[11]

Tagging

Tagging places an identifiable signature, either passive or active, on a TLI. Some have suggested using strips of special paint or "glint" tags that would be fixed to the equipment and photographed. Another method is to use optical fibre, cutting it to produce a unique pattern, and then photographing the cut. Active tags such as the

German "Vacoss" are another alternative. A small tag using a random number identifier attached by a fibre-optic loop seal could be read by a hand held, calculator-size interactive unit to identify the TLI.[12]

Aerial Reconnaissance

Included in the 1986 Stockholm Document, aerial reconnaissance provides a means of cooperative inspection in which the host country retains control of the aircraft but the inspecting country specifies the flight path. This provides coverage of more area in less time at altitudes that allow visual observation. Some have suggested that aerial reconnaissance and tagging could be combined to form a fast and effective means of counting TLIs.[13]

President Bush's proposal to explore President Eisenhower's "Open Skies" plan once again could provide an additional means of verifying CFE TLIs. This plan proposed allowing unarmed aircraft from the U.S. and Soviet Union to fly over the land of the other country. President Bush proposes that the new plan include all allies on both sides and that details be worked out soon in talks separate from other arms control negotiations. "Such surveillance flights, complementing satellites, would provide regular scrutiny for both sides. Such unprecedented territorial access would show the world the meaning of the concept of openness."[14]

President Bush's proposal received endorsement at the 1989 NATO summit meeting. Canada's Secretary of State for External Affairs, the Right Honorable Joe Clark, noted that "Arms control verification from

satellites alone is not adequate to the tasks ahead, Canada therefore supports the call for open skies, which would open all national airspace to surveillance by unarmed aircraft." He contends that aircraft could overcome some satellite limitations such as, fixed orbits, predictable times, and limited time on station. Perhaps more important, photographs from aerial surveillance could be made available to all nations not just the large countries with satellites. He believes " . . . it is essential that all parties to the agreement [CFE] have the ability to assure their publics, on the basis of their own judgements, that these agreements are being adhered to, and that their security is intact."[15]

Edward Shevardnadze, Soviet Foreign Minister, expressed a positive response to the open skies proposal and suggested that implementation could become a part of a future global system to strengthen trust and scale down the military threat. He indicated that the Soviet Union was prepared to take part in a conference to discuss the issue. He suggested expanding the proposal to include "open seas and oceans, open lands, and open space." "Glasnost here cannot be selective and limited, it should be everywhere."[16]

While it is unlikely that all restrictions would be lifted, allowing some freedom of overflights and unrestricted movement for in-country personnel could increase the alliances' confidence in treaty compliance.

Methodology

The methods employed to verify arms control agreements using these monitoring technologies vary by agreement. The methods used to verify the 1986 CDE accord and the 1987 INF Treaty will be used as examples. In the next chapter, lessons learned from these agreements will be identified.

Conference on Confidence- and Security-Building and Disarmament in Europe (CDE)

The Stockholm Accord, adopted by thirty-five states, expanded the confidence-building measures in the 1975 Helsinki Final Act. It broadened the categories requiring advance notification/observation and included on-site inspections with no right of refusal. These inspections are short notice, intrusive, challenge inspections of military exercises or other military activity involving ground forces.[17] NTM was also included as a means to monitor military activity. "Indications of unannounced military activities detected by NTM can serve as the basis for mandatory challenge inspections."[18]

Between August, 1987 and June, 1989, ten different states conducted twenty-four inspections. The U.S. conducted six inspections in four countries: Soviet Union (2), Hungary, German Democratic Republic (2), and Poland; while the Soviet Union conducted seven inspections in six countries: Turkey, Federal Republic of Germany (2),

Norway, United Kingdom, Italy, and Denmark. The remaining inspections were conducted by the United Kingdom (2), GDR (2), Bulgaria, FRG(2), Turkey, Poland, Italy, and Canada.[19]

INF

The U.S. had three basic verification objectives for the INF treaty: (1) to ensure confidence in the treaty; (2) to deter violations by increasing the likelihood of detection and the difficulty of committing an undetected violation; and (3) to permit timely detection of violations.[20] This had a direct impact on the verification regime.

The U.S. employed a two-track verification scheme in the INF Treaty. NTM was used " . . . to detect illegal non-declared or `covert' treaty-limited items at any non-declared locations. . . . [T]he principle function of NTM is not to `count', but to detect any illegal system." OSIs are used to `count' the overt inventory at declared sites, observe elimination and confirm the absence of TLI at formerly declared sites.[21]

In two months, INF inspectors verified the base-line inventory at some 133 sites. After all related INF equipment is removed from a facility, close-out inspections confirm that an installation has been vacated. As of November 1988, the U.S. had completed 26 formal close-out inspections. This process will not be completed until 1991.[22]

The INF Treaty provides for portal monitoring at one Soviet and one U.S. plant. The Votkinsk Missile Assembly Plant will be under continuous portal monitoring for 13 years. Thirty inspectors, 24 contractors and 6 military, are located on-site just outside the maingate to ensure that SS-12s, SS-23s or SS-20 missiles are no longer produced at this plant.[23] The Soviets also have the right of portal monitoring at the Hercules Magna Plant in Utah. The " . . . plant is now ringed with double fences, between which Soviet inspectors patrol to ensure that no illegal missiles are being sneaked out. The Soviets have also set up remote cameras and an egress watch station."[24]

Short-notice inspections can be used to spot check on-site compliance. However, limits are imposed by year. During the first three years each party is allowed 20 inspections each calendar year, 15 inspections the next five years and 10 during the final five years.[25]

Unlike SALT I AND II where NTM was the primary means of verification, INF and the CDE verification regimes have employed different methods. Both use NTM as a triggering mechanism rather than as the only means of monitoring activities. This, in part, is because of data exchange and the characteristics of the activities being monitored. The complexities of a CFE agreement: tens of thousands versus thousands of TLIs, ceilings by sub-zone and nations versus system eliminations, etc., present new challenges to the verification process. In the next chapter, lessons learned will be examined to determine if proven technologies and techniques can be adapted to the CFE verification process.

ENDNOTES

1. Rowell, p. 51.

2. Lothar Ibrugger, Draft General Report on Verification Technology for Arms Control," p. 22.

3. Noel Gayler, "Verification, Compliance, and the Intelligence Process," in Arms Control Verification - The Technology that Make It Possible, ed. by Kosta Tsipis, David Hafemeister and Penny Janeway, p. 7.

4. Krass, p. 20.

5. Ibrugger, p. 3.

6. Ibid., p. 4.

7. "British Museum Can't Show U.S. Spy Plane," The Stars and Stripes (European Edition), 6 December 1989, p. 2.

8. William E. Burrows, Deep Black: Space Espionage and National Security, p. 160.

9. Robert Travis Scott, "Insights of an On-Site Inspector," Arms Control Today, November 1988, p. 4.

10. Brian S. Mandell, The Sinai Experience: Lessons in Multimethod Arms Control Verification and Risk Management, pp. 36-42.

11. Ibrugger, p. 26.

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13. Ibid., pp. 22-23.

14. "Change in the Soviet Union," a speech by President Bush at Texas A&M University, 12 May 1989, Department of State Bulletin, July 1989, p. 17.

15. Joe Clark, "Don't Dismiss Open Skies," The Disarmament Bulletin, Spring-Summer 1989, p. 4.

16. "Edward Shevardnadze's Press Conference in Jackson Wyoming," Tass, 24 September 1989, Soviet News (London), 27 September 1989, p. 319.

ENDNOTES

17. Don S. Stovall, "The Stockholm Accord: On-Site Inspections In Eastern and Western Europe," in Arms Control Verification and the New Role of On-Site Inspection, ed. by Lewis A. Dunn and Amy E. Gordon, pp. 16-17. Cited with permission of Colonel Stovall.

18. Michael Krepon, "Verification of Conventional Arms Reductions," Survival, November/December 1988, p. 546.

19. Stovall, p. 35.

20. U.S. Arms Control And Disarmament Agency 1987 Annual Report, p. 184.

21. Ibid., p. 185.

22. Scott, pp. 3-4.

23. Ibid., p. 4.

24. David C. Morrison, "Trusting, But Verifying," National Journal, 21 October, 1989, p. 2582.

25. Scott, p. 5.

CHAPTER VII

LESSONS LEARNED FROM EXISTING AGREEMENTS

The differences between verification of conventional arms control and verifying intermediate-range or strategic nuclear forces are many. First, the quantity of TLIs is greater. For example, the number of Warsaw Pact tanks to be removed, over 30,000, from the ATTU is more involved than the "entire INF agreement." Second, the CFE TLIs are smaller than INF items and highly mobile. Third, CFE imposes limits not complete elimination. And finally, 23 governments rather than two must be satisfied that all parties are complying with the treaty provisions.[1]

Although there are significant differences, valuable lessons can be learned from the experience gained in carrying out the verification provisions of existing agreements. The CDE Accord has provided first hand experience with data exchange, on-site inspections without the right of refusal and challenge inspections. The INF verification regime is also providing experience with data exchange, base-line, elimination, and close-out inspections. The purpose of this chapter is to review those lessons in hopes that the CFE process can benefit by improving where possible on the procedures and techniques being used.

It has been disappointing to find only a limited number of articles discussing lessons learned after more than two years of intense verification activities. In some cases, this may be because of the nature of the agreements, bilateral versus multilateral, or because of the speed with which changes have occurred. However, it could be

caused by over classification. If true, it would be a mistake to continue this approach considering recent world events. All events indicate that reductions, in some form, will occur in the very near future. This will have a profound impact on the military balance and will, at one time or another, have a direct impact on many service members as they become involved directly or indirectly in the verification process.

CDE Lessons Learned

A team of four U.S. Army Officers conducted the first on-site inspection, carrying out the 1986 CDE provisions, in August of 1987. Colonel Don O. Stovall, USA Ret., team leader, provides many insights into the preparation and conduct of these inspections: "The events leading up to these first on-site inspections and the lessons learned from them are instructive for future arms control negotiations."[2]

The first U.S. on-site inspection involved the elements of one Soviet tank division and one motorized rifle division of 16,500 troops and 425 tanks.[3] Based on this inspection and participation in other inspections conducted by the Warsaw Pact, Colonel Stovall has drawn several broad conclusions and technical lessons from his experience.

Conclusions:

- Soviets have determined that on-site inspections in the Stockholm conventional force arena do not pose a significant danger to their national security.

- Soviets have demonstrated a willingness to cooperate and make the inspections a success.

- To date, there has been no evidence that any exercises inspected have been threatening to any nation.

- There has been no evidence that any country has cheated.

- Initially aggressive, Soviet inspectors have mellowed, cooperation has simplified the handling of problems, and a give-and-take atmosphere has become more possible.

- U.S. practice inspections helped prepare for actual inspections.

- Detailed knowledge of an inspector's rights is essential.

- Western unity regarding the implementation of verification provisions is essential. Soviet inspectors discern even minor differences and are quick to exploit them to their advantage.

- Eastern European escort officers deferred questions of access to Soviet liaison officers. Disunity among Warsaw Pact nations about the Stockholm Document has not been apparent.

- Inspection teams have to deal with ambiguities in the document. Defining "sensitive points" is the most serious issue (the definition should be carefully reworded or it could get worse; a rigid definition is not the answer).

Technical Lessons Learned:

- Recording vehicle numbers by dictaphone or camera will be necessary to preclude double counting weapons and equipment.

- Reduction in the number of hours (thirty-six) after the request and the time a team is permitted to enter the territory should limit opportunities for the receiving state to cover up exercise violations.

- Improved communications may be needed for extensive CFE inspections.

- Inspections have not been used for the overt collection of intelligence. Gathering information for verification and confidence should not be construed as collecting intelligence.[4]

INF Lessons Learned

The Intermediate-range Nuclear Forces (INF) Treaty between the U.S. and Soviet Union became effective 1 July 1988. The U.S. Senate Foreign Relations Committee described this treaty " . . . as imposing the most comprehensive and intrusive verification regime ever established to monitor compliance with a U.S.-Soviet arms control agreement."[5] NTM, data exchange, and a combination of on-site inspections are the key components of the verification regime.

The U.S. On-Site Inspection Agency (OSIA) was created to implement the on-site inspections. As of April 1989, OSIA had " . . . completed 128 base-line inspections, 16 quota inspections, 53 closeout inspections, several special category benchmark inspections and 50 elimination inspections in support of the INF Treaty."[6]

The first lesson learned from the INF experience is the value of planning. Washington did not take action to address implementation until one week before the treaty was signed. According to the director of OSIA: "It was extremely difficult, . . . we didn't have a headquarters[,] . . . didn't have telephones[, and] . . . didn't have safes." OSIA was "established on Jan. 15, 1988, to manage a treaty that formally took effect less than six months later on July 1."[7]

The second lesson involves the logistics of moving inspectors to different sites. During the first 60 days, 164 facilities: 133 Soviet

and 31 U.S., were subjected to base-line inspections. One hundred and forty five air missions were required to support U.S. inspectors and escort officers. This placed a significant strain on Military Airlift Command air assists.[8] This effort will seem minor compared to the number of potential sites involved in CFE base-line inspections. Some estimates place the number of sites as high as 3500 to 4000 for battalion level and 1500 for regimental level inspections.[9]

Another logistical lesson learned is the need for qualified Russian linguists. "Very few military linguists are asked to do the sort of stand-up interpreting . . ." required during an INF on-site inspection. According to Mark M. Lowenthal, formerly with the State Department's Bureau of Intelligence and Research Service: "If two of these treaties were to happen in short order, CFE and START, for instance, it will be an overwhelming task to find and train inspectors."[10] OSIA trained and used 20 ten-person inspection teams for INF base-line inspections. Each ten-person team had two linguists. The number of linguists required for escorting Russian inspectors was even higher -- five linguists per escort team.[11]

The next lesson deals with the need for forward basing of inspection teams and an infrastructure to support them. Given the distances involved in the Soviet Union and the inspection rate, averaging two per day over 60 days during base-line inspections, OSIA found that inspectors could not be based in the United States. Teams were prepositioned in Europe and Japan at forward bases called "gateways." Teams, briefers, debriefers, and a small operations and airlift cell were based forward to support the initial inspections.[12]

The fifth lesson concerns the conduct of inspections and the importance of good team leadership. First, Soviet escorts are " . . . for the most part quite professional and the Soviets are discharging their [INF] treaty responsibilities." Although occasional moments of tension have erupted locally and for only brief moments, inspectors have been well treated.[13] According to BG Roland Lajoie, current OSIA Director, teams can be shortchanged in any category (linguists, inspectors, etc.) except team leadership. Team leaders must be " . . . solid officers with proven leadership qualities whose judgement you trust. . . . [Y]ou will invariably come back with good results and fewer incidents, if you have a good strong team leader."[14]

The next lesson concerns integration of on-site inspections with the other verification data and the final steps of the verification process. In Chapter V, the verification process was viewed as six sequential stages: monitoring, information processing, analysis, identification, evaluation and response. OSIA does not make "broad verification judgements." The primary mission of OSIA is to "monitor on-site compliance" by retrieving specific pieces of information and providing that information to the policy community. Expertise from other interested government agencies was built into OSIA's structure: the OSIA director is either a civilian or military officer from DOD. He is supported by three deputies: the principle deputy comes from the Arms Control and Disarmament Agency; and the others from the State Department and Federal Bureau of Investigation (FBI).[15] This combination of backgrounds and expertise from other agencies provides OSIA with unique leadership needed to deal effectively with the issues

posed by the INF verification regime. For example, one of the major concerns with on-site inspections, especially production plant inspections, is the " . . . loss of military secrets." In the United States, the FBI is in charge of domestic "foreign counterintelligence." "That is why one of OSIA's three deputy directors hails from the FBI . . ."[16]

These lessons should be considered as actions are taken to implement CFE verification. More lessons should be identified and shared with all services and allies.

ENDNOTES

1. Hirschfeld, p. 16.
2. Stovall, p. 16.
3. Ibid., p. 18.
4. Ibid., pp. 28-30.
5. Morrison, p. 2580.
6. Interview with Michael Hritsik, LTC, USAF, U.S. On-Site Inspection Agency, INF Inspection Team Chief, 13 November 1989.
7. Morrison, pp. 2580-2581.
8. Ibid., p. 2581.
9. Hritsik interview, 13 November 1989.
10. Morrison, p. 2581.
11. Hritsik interview, 13 November 1989.
12. Scott, p. 10.
13. Morrison, p. 2581.
14. Scott, p. 6.
15. Ibid., p. 8.
16. Morrison, p. 2582.

CHAPTER VIII

CFE VERIFICATION MEASURES: HOW EFFECTIVE ARE THEY?

The CFE stabilization and verification measures proposed by the West are designed to constrain threatening military activity and provide visibility of military significant actions in the ATTU region. Given current technology and the lessons learned from the CDE accord and the INF Treaty, how effective will the measures be in meeting these objectives?

The position paper tabled by the West included provisions for data exchange, six stabilizing measures, nine verification measures, and measures to prevent circumvention. The success of these measures in meeting the stated objectives will be analyzed in phases based on three major verification tasks: base-line data validation, reduction monitoring, and compliance with residual force limits. The first phase, data validation, includes all actions necessary to validate the data about the forces to be reduced. The next phase covers the task of monitoring reductions until forces reach TLI ceilings. The final phase, residual force monitoring, involves confirmation of compliance with the agreed limits for the life of the CFE Treaty.

Data Validation

During this phase, data about current forces included in the initial information exchange between the two alliances will be validated. This is an important first step. Establishing confidence

in the information exchanged is critical to the verification process and later phases. Because this data will provide the basis for the verification of compliance, a simple, but effective means of validating the initial database is key to the success of CFE reductions.

One estimate of the effort required to conduct base-line inspections at regimental level or above was made by LTC Hritsik, an experienced INF team chief with OSIA. Approximately 1500 sites, regimental level or above, contain TLIs. LTC Hritsik has over 150 days of on-site inspection experience and has led 20 teams on various types of on-site inspections. He estimates that 40 teams consisting of 5-10 members could inspect 1500 sites in 3 months. This would require inspecting an average of 17 sites per day, assuming 3-6 sites were inspected per trip and three 5-day trips were scheduled per team per month. Since some sites are small and located near each other, some teams could inspect more than one site per day. Consecutive inspections of 3-6 sites are possible and would significantly reduce airlift requirements.[1]

A 100 percent base-line inspection program may not be required or desired. Inspecting, at random, a large sample of units with TLIs at declared sites should be sufficient to validate the initial exchange of information. Although suggested by others as a technique for residual force monitoring,[2] it could be effectively used to validate the initial data exchanged between the East and West. The West has proposed exchanging disaggregated data down to battalion/squadron level. If this level of detail, or at least regimental level, were adopted and random samples were taken, both alliances could determine

if the data exchanged was accurate with a high degree of confidence. This would be sufficient to establish an acceptable degree of confidence in the data and support the next phase: monitoring actual reductions.

The number of on-site inspections (OSIs) of declared sites could be further reduced by covering specific sites by NTM. This would reduce manpower and airlift requirements, but require disseminating the NTM products. Since this is not likely to occur because of the need to protect national techniques and methods, the simplest and least expensive approach would be by random sampling. Verification measure 6 (VM-6), aerial inspection, also could be used to reinforce or replace OSI, especially at locations that garrison more than one regiment or brigade.

The proposed verification measures do not specifically address the issue of initial data validation, but short notice inspections of declared sites could be used for this purpose. The quota of inspections, expressed in number of days presence, would have to take this into account during the first year of the treaty. In the future, information exchange would be validated in the normal course of monitoring specific limitations. VM-2, inspection of non-declared sites, could be used if significant discrepancies were found at the declared sites. LTC Hritsik estimates individual countries would host no more than 10 inspection teams from the other alliance at any one time during data validation. Each alliance would host no more than 25-40 teams at any one time.[3]

The provisions provided by the draft proposal are adequate for effective data validation. However, managing the implementation of this phase and later phases will be critical to the success of the proposed verification regime. The West has proposed that verification execution and judgments about compliance will be a sovereign responsibility, but cooperative arrangements should not be impeded. The implications of this approach and the impacts on verification effectiveness are significant. These issues will be addressed in the next chapter.

Reduction Monitoring

VM-4 addresses this phase of the CFE Treaty. As proposed, VM-4 gives participants the right to monitor destruction on-site without the right of refusal, requires advance notification of destruction and requires completion of destruction within a specific number of years. Periodic on-site inspections of system destruction would be sufficient to ensure that TLIs are destroyed or removed from the ATTU as agreed. The challenge will be to keep the "books" current and accurate. Over a period of months and years, keeping track of what has been destroyed will become an accounting nightmare. The only way to be certain, will be to have inspectors on-site to record and monitor destruction.

Residual Force Monitoring

> The most difficult verification problems will arise once changes in the size, location, and disposition of forces have been agreed upon, and when forces have been restructured following reductions and disbandment.[4]

The problems of verification: large numbers of TLIs, huge area, and thousands of sites, are now compounded by an unfamiliar situation: restructured forces. This is why information exchange is critical to the CFE verification process. "The problems of verifying ceilings are generally the same whether the ceilings apply to the entire ATTU, to the TLIs in only one country, or to national TLIs outside national borders. . . . there is no reliable way to count them all and having counted them to know where each is, every day."[5]

Thomas J. Hirschfeld, former U.S. deputy representative to the MBFR talks, suggests that cheating cannot be prevented. The best we can expect is a system that " . . . will alert us to military significant infractions."[6] Knowing how many TLIs are located in a specific area on a given day is not enough. "These items are only significant militarily as a component of the forces within which they operate." Therefore, to be effective, verification requires " . . . knowing the location, designation, and subordination of the units within which TLI operates, where and how TLIs are stored and manufactured, and the sites from which they are exported."[7]

Others agree. Lynn Hansen cites Han-Dietrich Genscher, West Germany's Foreign Minister, and Ambassador Jonathan Dean as having expressed similar thoughts. Both argue that military capability is determined by the combination of weapons, military personnel and

organization. To this, Hansen adds military doctrine and asserts that the most obvious indicators of doctrine are organization and disposition.[8]

Hansen proposes using regimental templates as a means of placing the TLI ceilings in "manageable packages." For example, a typical motorized rifle regiment might contain 40 tanks, 18 self-propelled artillery pieces, and 152 armored troop carriers. This is a reasonable size force to measure. "The principle is simple: one can count 40 tanks, it is impossible to count 20,000."[9]

Random sampling could determine with a specified degree of confidence " . . . the authenticity of the information provided by the other side. . . ." This statistical analysis integrated with other information would be used in the process of judging compliance. The advantage of this technique is that it checks the data provided by the other side rather checking the validity of intelligence estimates.[10]

Short notice inspections of declared sites, non-declared sites, monitored storage, aerial inspection, and NTM could all be used effectively to execute this idea. The key to success will be the integration of verification and stabilizing measures over time.

Monitoring of exit and enter points, as some have suggested, is not specifically addressed in the NATO proposal. However, VM-5, monitoring of stabilizing measures, gives each participant the right to monitor, under appropriate conditions, stabilizing measure 2, notification of movements. If movements " . . . from one location to another within the area of application" exceed 600 MBT, 400 artillery pieces or 1200 armored troop carriers within a 14 day period,

stabilizing measure 2 requires 42 days advance notice of the movement.[11] This could be interrupted to cover exit and enter. However, the proposal specifically states "within the area of application." Since participants are also required to provide notification of changes in force levels, an attempt to move large numbers of ground forces into the area without notification would obviously violate the intent, if not the letter, of the treaty. More stringent exit/enter point monitoring would be unacceptable because of the possible constraints it could place on "out of area" operations.

Monitoring of production plants is limited to exchange of information. Each participant must provide data on TLIs present in the ATTU " . . . which has been produced within the area . . . but which is not in service with the armed forces of any participant."[12] This will provide information on TLIs in storage at production plants, but would not provide information about planned use. Some have suggested that exchange of equipment, replacement of old TLIs with new TLIs, should require advance notification along with the disposition of the old equipment: destroyed, placed in storage, etc.[13] This would provide information on the disposition of plant inventories without infringing on the rights of sovereign nations and sensitive foreign military sales and aid programs.

Special procedures for verifying aircraft and helicopter limits have not been defined. Several techniques such as identification by number, permanent monitors stationed at selected airfields, or tagging have been suggested. It is difficult to imagine any single system for aircraft and helicopters that does not have major drawbacks.

Identification numbers can be easily changed unless special "glitter" paint is used and the special application recorded.[14] This is technically possible, but may be expensive to carry out. To be certain the limits were not exceeded, all airframes would have to be counted simultaneously. On the other hand, this would only provide a "snapshot" of the status.[15]

To overcome this problem, permanent monitors could be stationed at major airbases to record aircraft arrivals and departures. To be effective, they would have to exchange information often through an extensive communications network. It is highly unlikely that all participants will agree to permanent monitors on sensitive airbases.[16]

Special transponders could be installed in each airframe for unique identification. However, allowances would have to be made for maintenance and repair that would seem to eliminate a "tamper-proof" concept.[17]

Some have suggested the most effective way to verify aircraft and helicopters is to focus on capabilities and not try to count each airframe as the only means of determining compliance. " . . . [I]f the design for monitoring ground force ceilings provides confidence that non-compliance can be detected on a timely basis, then one might consider NTMs and a more limited form of on-site inspections as the more acceptable means of monitoring aircraft ceilings."[18] Over time this data would support an assessment of the air threat.

ENDNOTES

1. Hritsik interview, 13 November 1989.

2. Hansen, p. 11. Also see Russell Maxfield and Arend J. Merrburg, "Two Techniques for Verifying Conventional Reductions," Arms Control Today, Vol 19, No. 6, August 1989, p. 19.

3. Hritsik interview, 13 November 1989.

4. Hirschfeld, p. 18.

5. Ibid.

6. Ibid., p. 17.

7. Ibid., p. 19.

8. Hansen, p. 8.

9. Ibid., p. 9.

10. Ibid., p. 12.

11. "NATO Tables Verification Proposal at CFE Negotiations," p. 7.

12. Ibid., p. 6.

13. Hansen, p. 17.

14. Krepon, "Verification of Conventional Arms Reductions," p. 551.

15. Hansen, p. 18.

16. Ibid.

17. Ibid.

18. Ibid., p. 19.

CHAPTER IX

ORGANIZING FOR EFFECTIVE CFE VERIFICATION

Arms control agreements are becoming more complex and the CFE agreement is no exception. It is obvious from the discussions in previous chapters that verification depends not only on technology, but also on a comprehensive implementation strategy. Lessons from the CDE accord and the INF treaty suggest that extensive coordination is necessary to carry out intrusive verification. Because of the multilateral nature of the CFE treaty, it will require even more cooperation and coordination within the alliance to achieve the goals of effective verification.

As proposed, verification implementation and judgments about compliance will be a sovereign responsibility. However, cooperative arrangements should be possible. Since the verification process is a combination of technical and political activities, implementation of the CFE verification regime also could be a combination of activities carried out by different organizations. This chapter will explore the options of organizing for effective CFE verification.

ORGANIZATIONAL OPTIONS

Some have suggested an "intra-alliance structure" for monitoring and verification to deal with " . . . the complicated task of distributing monitoring and inspection tasks, collating and exchanging information from various sources (including NTMs), and interacting with

the North Atlantic Council on all issues relating to verification."[1] On the other hand, participants strongly resisted attempts to create a formal bureaucracy to oversee CDE verification.[2] The challenge of this option is to integrate individual sovereign rights and interest with the collective interest of the alliance.

Others have suggested an international verification agency.[3] Allan Krass cites two such proposals: Alva Myrdal's in 1974; and B. Jasani's and A. Karkoszka's suggestion in 1981. Although this agency would be free from political influence by restricting its activities to assembling, collating, coordinating and transmitting data, Krass concludes that it is unrealistic to assume that the verification process can be divided into two components: an objective component (collection and dissemination) and a subjective or political component (analysis, evaluation and response). He contends " . . . the act of assembling information has political content. . . ." because all information cannot be assembled and some choices will always be necessary.[4] He concluded that the international political climate in 1985 and history provided little basis for optimism that such an organization could be created soon. However, Krass noted that such an organization might be feasible once multinational verification efforts show effectiveness and create a useful experience record.[5]

Taking these comments into consideration, there are only two realistic options for the immediate future. One would have each participant take steps to carry out the verification measures and arrive at independent judgments about compliance. This is similar to the approach taken with the CDE accord. The other option uses the

alliance, in a manner yet to be defined, to manage some or all the tasks involved in a comprehensive verification program.

ORGANIZATIONAL IMPACTS OF INF TREATY

The initial actions taken by the U.S. to carry out the INF treaty provide a preview of some organizational issues created by an extensive verification regime. While this example does not apply necessarily to all CFE participants, it does provide insight into the organizational issues that should be considered for both options.

The U.S. created four new organizations for INF implementation: the On-Site Inspection Agency (OSIA) reporting to the Department of Defense (DOD) for inspections; a new office in the Arms Control and Disarmament Agency (ACDA) to address compliance questions; an INF monitoring office in the Central Intelligence Agency (CIA); and a new office, the Nuclear Risk Reduction Center, in the Department of State to handle message traffic.[6] Above this level, Washington created an interagency INF implementation steering group, chaired by the National Security Council staff, to deal with INF requirements.[7]

The Administration created these new organizations even though a committee created in 1982, the Arms Control Verification Committee chaired by the national security adviser, had general jurisdiction over treaty implementation and compliance questions. This committee with two groups, an analysis group and a policy group with membership at the assistant or deputy assistant secretary level, had the responsibility to " . . . assess the verifiability of arms control proposals, review

monitoring requirements and analyze Soviet compliance with existing agreements."[8] The analysis group, co-chaired by the Director of ACDA's Verification Bureau and the CIA's chief of the arms control intelligence staff, had the function of correlating military activity with treaty obligations without drawing conclusions about noncompliance. The policy group, co-chaired by the Department of State's assistant secretary for politico-military affairs and the DOD's assistant secretary for internal security, had the mission of drawing conclusions about compliance.[9]

In their assessment of these arrangements for INF implementation, Krepon and Graybeal suggest that any bureaucratic design should meet three criteria: " . . . institutional arrangements must be (1) conducive to prompt but well-coordinated evaluation, (2) resistant to manipulation, and (3) disposed to problem-solving approaches."[10] In their opinion, the initial arrangements did not meet the criteria. They made several suggestions for improvement that could apply to arrangements established to carry out a CFE agreement.

First, the separation of policy and operational agencies, ACDA and OSIA, is a good idea. However, the operational aspects must be well coordinated with all interested agencies, and the operational agency should not be " . . . too dependent upon the bias of a single institution." The former concern was reduced by filling OSIA's key leadership positions with people from DOD, Department of State, ACDA, and the FBI (see Chapter VIII, Lessons Learned). The latter could be strengthened by providing the OSIA more autonomy.[11]

Second, involving a policy organization too deeply in monitoring activities tends to make the lines between analysis and judgments about compliance less distinct. Keeping the analysis function in the intelligence community and judgment in the policy community " . . . constitutes an important restraint in the politicization of intelligence. In this context, politicization means the misuse of intelligence to support any particular bias -- either that the Soviets habitually cheat or that they are disinclined to do so."[12] These points should be considered even in an intra-alliance structure.

INTRA-ALLIANCE STRUCTURE

In an intra-alliance structure a relationship similar to that of NATO's High Level Task Force could be established with the North Atlantic Council. Technical experts, with input from the capitals, could deal with verification and monitoring issues. This would avoid direct involvement with the NATO bureaucracy. A deputy to the Secretary General could be appointed to chair the meetings of the intra-alliance group and interface directly with the leadership.[13]

Some have suggested an East-West center to deal with verification issues. Hansen concludes that this should be avoided because it would become a political forum that could impede taking " . . . remedial action in the event non-compliance is established." He recommends using normal diplomatic review conferences for this task rather than have NATO consult with the Warsaw Pact at the expert level on compliances issues.[14]

CONSULTATIVE GROUPS

The West has proposed establishing a Joint Consultative Group, Verification Measure 9, to " . . . resolve ambiguities, address questions of compliance as well as promote the treaty's viability."[15] This is not a new idea. Other treaties, such as SALT and INF, have used similar type organizations.

SALT's Standing Consultative Commission (SCC) is " . . . a forum and a mechanism for the two countries [US-USSR] to consider questions of compliance with obligations[,] . . . to reconcile any misunderstandings or uncertainties arising in the performance of those obligations, and to consider possible proposals for increasing the viability of agreements already concluded, as well as . . . further strategic arms limitations measures."[16] This commission is " . . . not a judicial body with enforcement powers but a consultive body. . . . Nor does the SCC have 'monitoring responsibilities' for an agreement. . . ."[17]

Because of many reasons, most dealing with how the SCC had functioned and the INF treaty structure, the Soviet Union and the U.S. agreed to handle INF Treaty implementation and compliance functions separately. They established their own On-Site Inspection Agencies, and a Special Verification Commission (SVC) to resolve compliance questions. Special centers, called Nuclear Risk Reduction Centers, manage data exchanges, notifications and transmit/receive requests for cooperative measures.[18]

How a Joint Consultative Group will function within the CFE framework remains to be seen. Based on past experience, it should not be a judicial body or have responsibility for monitoring. It should be used as a first step in resolving implementation ambiguities and compliance questions.

It is clear from the limited discussion above that organizing for effective verification is a critical task that should not be delayed. Regardless of how the alliance approaches the implementation strategy, the complexities of a CFE agreement mandate that the alliance work together to verify compliance.

Several questions remain unanswered. For example, how will participants exchange data? If 23 separate databases are established, how will they be synchronized? Will 23 Coordination Centers be established to manage data, message traffic and inspection programs? Who will coordinate the transfer of unused inspection quotas and inspection programs to ensure that the number of inspections are sufficient for "effective verification?" Does NATO have a role to play? If so, can the six sequential stages of verification (monitoring, information processing, analysis, identification, evaluation and response) be orchestrated in such a way that would be acceptable to the alliance? These questions must be answered regardless of how the alliance organizes for verification. The verification and stabilizing measures proposed by the West can only be effective if applied in a systematic manner.

ENDNOTES

1. Hansen, p. 21.

2. Krepon, "Verification of Conventional Arms Reductions," p. 552.

3. Krass, p. 241.

4. Ibid., p. 242.

5. Ibid.

6. Michael Krepon and Sidney N. Graybeal, "How to Streamline The Arms Control Bureaucracy," Arms Control Today, November 1988, p. 11.

7. Ibid., p. 12.

8. Ibid.

9. Ibid.

10. Ibid.

11. Ibid., p. 13.

12. Ibid., p. 14.

13. Hansen, p. 21.

14. Ibid., p. 22.

15. "NATO Tables Verification Proposal at CFE Negotiations," p. 10.

16. Rowell, p. 126.

17. Ibid., p. 127.

18. Krepon and Graybeal, p. 12.

CHAPTER X

CONCLUSION

The proposed stabilization and verification measures can constrain threatening military activity and provide visibility of military significant actions if they are applied realistically and systematically within the region. Negotiations to date disclose that information exchange, NTM, on-site inspections, aerial inspections, and activity constraints will be included in a CFE agreement. To execute these measures effectively and efficiently, the West requires a comprehensive implementation strategy.

It is doubtful that a single nation could or should commit the resources necessary to ensure treaty compliance in isolation. Although NATO's proposal specifies that verification implementation and judgments about compliance will be a sovereign responsibility, it does not rule out cooperation between states. Effective verification will depend not only on the measures included in the CFE agreement but on the degree of cooperation NATO can achieve between its members. This will not be an easy task. To some, any action that suggests block-to-block provisions is unacceptable. However, this seems unrealistic given the magnitude of the verification challenge. Effective leadership and a strategy that preserves the rights of member nations to make final judgments about compliance can overcome or eliminate these concerns.

It is clear from the initial proposals that the CFE agreement will be complex and difficult to verify if the verification process is

frustrated by overly restrictive standards. Most agree that it is impossible to prevent cheating. However, a strategy that detects militarily significant changes in a timely manner can be developed and executed at an acceptable cost.

A strategy that includes a combination of intra-alliance and independent actions focused on the goals of the CFE treaty has the greatest potential for success. Collectively the alliance can generate the resources to detect militarily significant changes and preserve the rights of each nation to complete independently the final stages of the verification process: analysis, identification, evaluation and response.

The first, and perhaps the most critical, area of cooperation involves the management of the vast amount of data that will be exchanged between the East and West. The mandate for CFE negotiations recognized the importance of this data in verifying compliance. While it is technically possible for each nation to maintain separate databases, it is also technically feasible and more efficient to share information electronically. The difficulties encountered in specifying the current force levels in each alliance will seem insignificant compared to the challenges of managing disaggregated information down to battalion or regimental level.

Current information management technology, in the form of modern, relational databases, could provide a means of managing not only the information exchange process, but also correlating the results of compliance monitoring using the different measures proposed by NATO. Analyzing the information generated by the exchange and different

monitoring methods can be greatly enhanced by a modern information system connected by a robust communication network. This approach would streamline the information exchange process, standardize data elements and provide each NATO member with access to the data.

Each year information will be exchanged between the East and West. Ideally this exchange would be between two points, one in the East and one in the West, in an electronic medium. NATO Headquarters is the logical choice for the physical location of the data. Each member of the alliance could then access the information electronically from their respective capitals or obtain electronic copies of the database. This approach has several advantages over exchanging data between 23 nations. First, it eliminates the need for 16 nations to convert the information from "hard copy" to an electronic format and all the errors inherent in such a conversion process. In the worst case, only one conversion would be required if the East has to transmit the data on paper. Second, it provides the information to all NATO members in a form suitable for independent analysis and easily related to the data generated by monitoring. Third, it would standardize the data format. Finally, it would ensure that all nations work from the same base-line. This will be especially critical during the months when countries are removing treaty limited items. It will be virtually impossible to maintain and synchronize 16 different databases as the data changes at some 1500 locations.

The next area of cooperation involves data validation, reduction monitoring and residual force monitoring. It is unrealistic to expect each nation to collect enough data independently to ensure treaty

compliance. The leadership necessary to coordinate the activities of 16 nations must come from NATO. Because of political considerations, the framework for this effort must be flexible enough to allow for both national and international team participation. For example, some members may be willing to monitor destruction sites and not participate in on-site inspections. Others may want to do both. However, sharing the results of a well-coordinated effort to monitor treaty compliance is more important than team composition or participation.

An Intra-alliance Coordination Center, manned by an international military staff and supported by a robust automation system, is needed to coordinate monitoring tasks and exchange information from various sources. The center's primary mission would be to coordinate and expedite the monitoring efforts of member nations by (1) automating the data exchange process, (2) coordinating monitoring methods and (3) collecting, automating and disseminating the data from various sources. This approach is a variation of the structure suggested by Lynn Hansen in Chapter IX. The most important difference is that analysis, identification, evaluation and response would remain a sovereign responsibility.

Hansen suggested that a relationship similar to that of the High Level Task Force could be established with the North Atlantic Council under the leadership of a deputy to the Secretary General. Another option would be to establish it under the Military Committee. This arrangement would be similar to other agencies/groups that at present report to the Military Committee such as the NATO Defense College, the Military Agency for Standardization, the NATO Training Group, etc.

This structure provides several advantages. First, it maintains an appropriate separation between policy and operational levels within NATO. Second, it provides for a certain degree of autonomy that might be difficult to achieve if it were established as an element within the NATO International Staff or at a lower headquarters within the NATO Military Structure. And finally, it is consistent with the structure of other operational elements within the alliance.

The limited number of lessons identified from the CDE and INF experiences in this paper suggest that action should be taken now to prepare for CFE verification. There are many issues yet to be resolved and more lessons to be identified. Waiting until a CFE treaty is signed places effective verification at risk. NATO has a role to play in not only supporting the CFE negotiations, but also in developing and coordinating an implementation strategy. NATO nations must coordinate monitoring activities and share data efficiently and effectively to achieve the goals of effective verification.

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